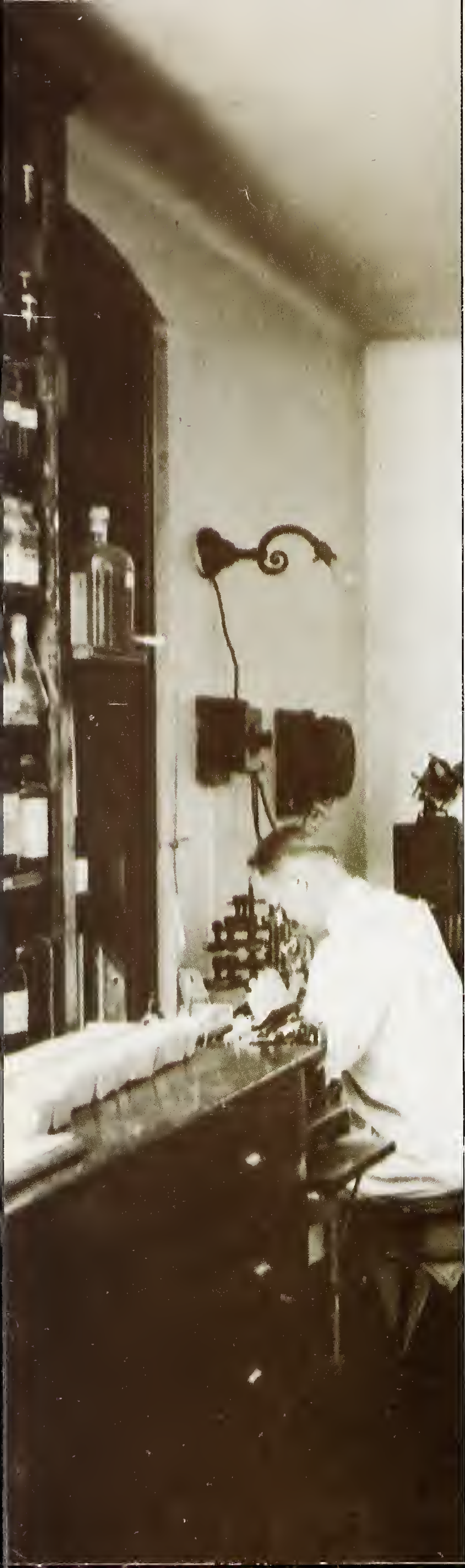
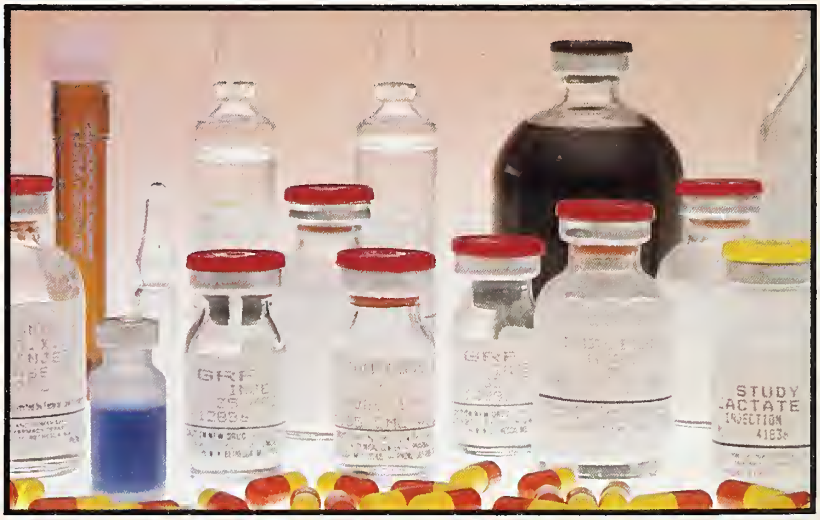


NIH
Centennial:

A Century of Science for Health

A CENTURY OF SCIENCE FOR HEALTH
1887 100 1987
NATIONAL INSTITUTES OF HEALTH



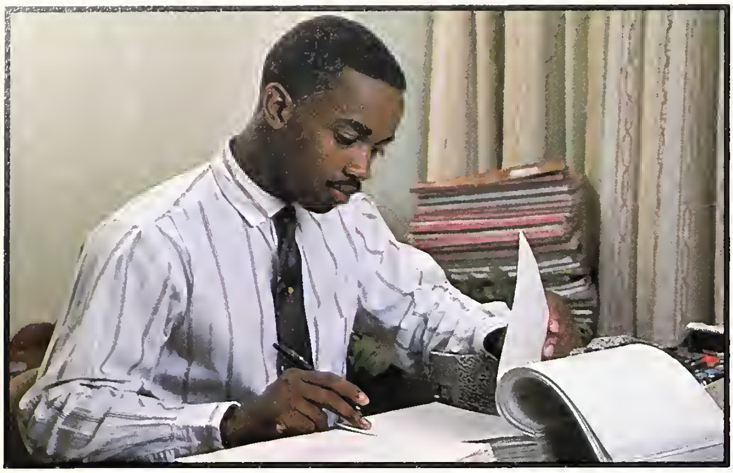
Front cover, right side photo courtesy of Burt Glinn/Magnum.

Welcome . . .

to the National Institutes of Health and the Centennial celebration of *A Century of Science for Health.*

NIH is this country's investment in the health of the American people. Today we can expect to live longer than ever before. This is largely due to the results of medical research . . . vaccines, antibiotics, new surgical and diagnostic techniques, and a better fundamental understanding of the human body and how it works.

NIH has been in the forefront of our Nation's quest for knowledge to prevent, detect, diagnose and treat disease during the past 100 years. The growth has been unparalleled in history! These advances have dramatically changed the practice of medicine. This exhibit is about some of these discoveries, and the role the NIH has played in the transformation of modern medicine.



PARTNERSHIP FOR BETTER HEALTH

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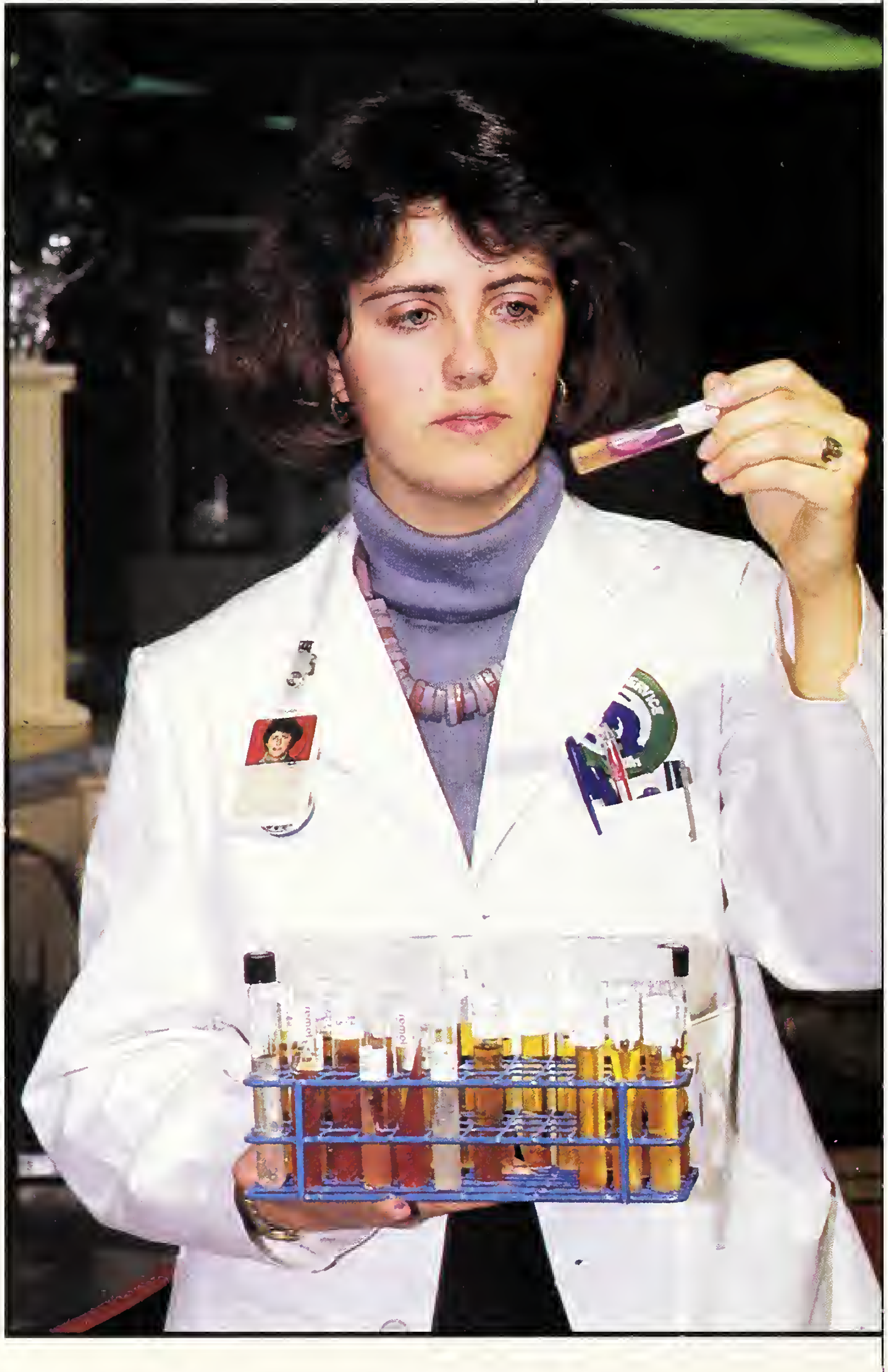
NIH: Where Government, Industry, and Academia Come Together



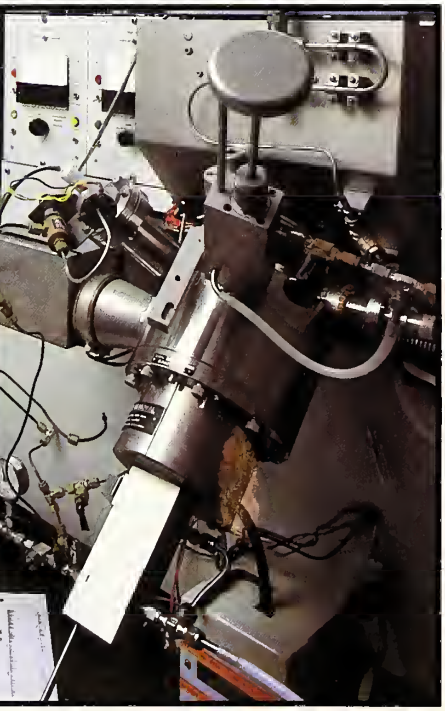
The National Institutes of Health is at the center of a vast network of biomedical research. The mission of the NIH is to uncover new knowledge that will lead to better health for everyone.

More than 80 percent of the NIH budget is used to support extramural research and research training across the country. These funds are awarded through a competitive grant and contract system. NIH's investment of tax dollars supports biomedical research in more than 1,300 universities, medical schools, hospitals, and other research institutions.

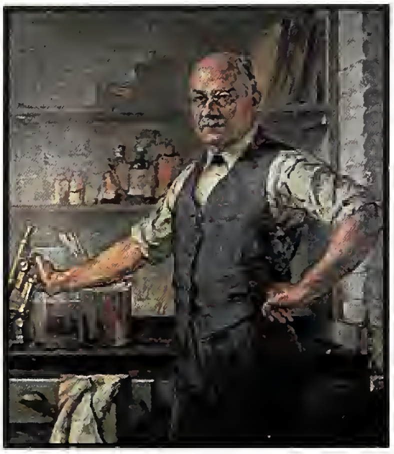
The remainder of NIH's budget funds intramural research. NIH intramural scientists (including over 1,200 with M.D. degrees and 2,000 with Ph.D. degrees) work in more than 2,000 laboratories, utilizing complex and sophisticated equipment.

Advances in biomedical research stem from a partnership among NIH, universities, medical schools, industry and other research institutions. Private pharmaceutical firms are a key component in the partnership. These companies not only conduct important basic research in their own laboratories, they also translate NIH research discoveries into medicines and other medical products that improve our health.

KRATOS MS50



Marine Hospital, Staten Island c. 1887 (above).



First Director of the National Institutes of Health, Joseph Kinyoun (above) and his microscope (below).

President Roosevelt dedicates the campus of the National Institutes of Health.

One Room Lab to World Renown

One hundred years ago the National Institutes of Health began as a one-room laboratory at the Marine Hospital on Staten Island, New York. The laboratory was allocated $300 for research on infectious diseases.

In 1891 the laboratory moved to the Butler Building near the U.S. Capitol. In 1904 Congress authorized funds for a separate building at 25th and E Streets Northwest and charged what was then known as the "Hygienic Laboratory" to "investigate infectious diseases and matters pertaining to public health." The Hygienic Laboratory quickly earned recognition for its research on yellow fever and cholera.

In 1930 Congress passed the Ransdell Act renaming the Hygienic Laboratory as the National Institute of Health and funding additional construction. In 1938 the NIH moved to its present site, a 318-acre campus in Bethesda, Maryland.

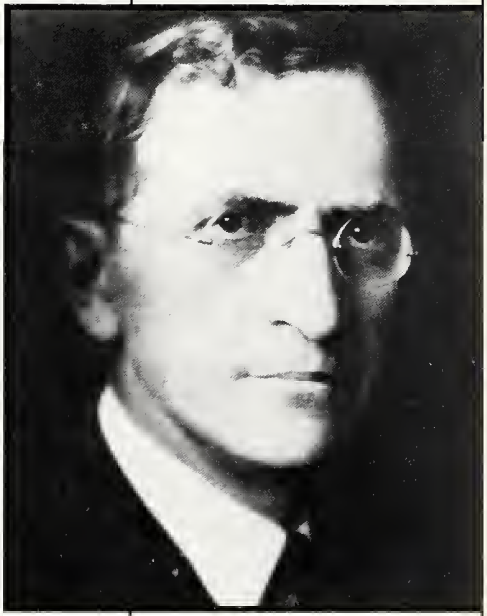
Following World War II, federal support for biomedical research was greatly expanded and so was the role of the NIH – which was renamed the National Institutes of Health to reflect the diversity of its efforts.

Today NIH encompasses more than a dozen research institutes and divisions, the world's largest research hospital, the National Library of Medicine, and the Fogarty International Center.

Victim of pellagra.

Yesterday: A Cure for Pellagra

Mankind has long suffered the effects of pellagra, a disease that produces red sores on the skin, blisters, swollen tongue, delirium and, in many cases, death. Some medical authorities thought pellagra was caused by eating spoiled corn, others believed it was an infectious disease.



In the early 1900s, Dr. Joseph Goldberger of the Hygienic Laboratory (the predecessor of the NIH) went into the deep South where pellagra was common. He visited orphanages and mental institutions where the children and the patients – but not the staff – frequently developed fatal cases of pellagra. Dr. Goldberger astutely observed that the staff ate a better, more varied diet. He tried to prevent pellagra by adding milk, eggs, beans, and peas to the diets of children in several orphanages. He succeeded.

To convince a dubious medical establishment, Dr. Goldberger conducted a series of heroic experiments. He, his wife, and 14 health workers then injected blood and swallowed capsules containing a variety of body products from pellagra patients. None of them developed pellagra, proving it was a dietary deficiency and not a contagious disease.

Later research identified niacin (vitamin B-3) as the essential nutrient that Goldberger termed "PPV" or the "pellagra preventative vitamin." But pellagra – which once killed 25,000 people in a five year period – disappeared almost overnight. *A Century of Science for Health* had scored an early victory.

Today: Better Survival for Cancer Patients

Today nearly 50 percent of all cancer patients are curable, compared to 38 percent in the early 1960s. NIH scientists have made great progress in developing more effective and less debilitating ways to treat cancer so that we are now half way to the ultimate goal – to cure everyone who develops cancer.

Progress began in the 1950s when NIH's National Cancer Institute (NCI) developed chemotherapy (drug treatments) to cure choriocarcinoma (a cancer of the placenta) and childhood leukemia. These successes helped establish chemotherapy as a standard cancer treatment. In the 1960s NCI researchers discovered a four-drug therapy to treat Hodgkin's lymphoma. Today over 80 percent of Hodgkin's patients are curable. This drug combination is also effective in curing a common form of lymphocytic lymphoma. The 1970s saw further progress in developing drugs like cis-platinum for testicular cancer and effective strategies for treating a number of childhood cancers.

Adjuvant therapy – adding drugs to initial cancer treatments such as surgery and/or radiation – has been refined in the past decade to prevent recurrences from hidden cancer cells that remain after the primary treatment. Adjuvant therapy has extended the life of many patients with common adult cancers including breast, colon, rectal, bone, and lung cancer.

In the 1980s the human immune system was recruited to fight cancer. Early attempts to use the body's own proteins and anticancer immune cells in cancer treatment appear promising. Combined with better early detection and diagnostic techniques, as well as expanded education efforts on avoiding cancer risks, there is great hope that the next century may see even greater progress.

Patient undergoing lung function test.

Heart Disease: Treatment Advances and Lifestyle Changes

Myocardial infarction (MI) – also known as heart attack – often kills within a few hours. In the 1960s many hospitals established specially equipped coronary care units (CCU's). Better heart monitoring equipment, improved drugs, and new cardiopulmonary resuscitation (CPR) techniques assisted the CCU's in reducing heart attack deaths.

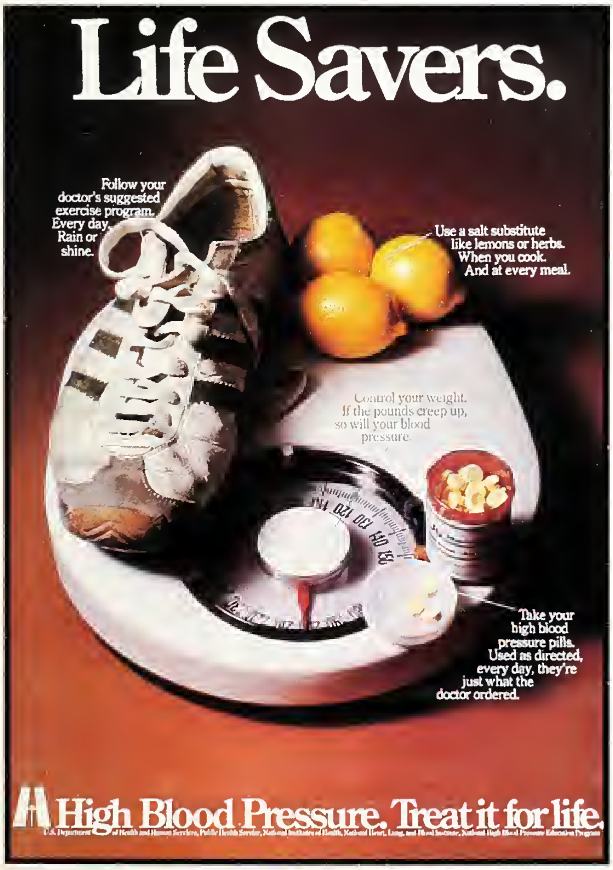
In 1967 NIH's National Heart, Lung, and Blood Institute (NHLBI) launched a comprehensive study in the CCU's to identify the best strategies to counterattack the heart attack. This research led to new drugs that helped to regulate heart rhythm and prevent heart failure, particularly during the first critical hours. It also validated the effectiveness of beta-blockers and other drugs for long term use following an MI.

Since 1972, research advances and lifestyle changes have helped lower the death rate from coronary heart disease by 43 percent. More sophisticated ways to detect, treat, and prevent damage caused by coronary artery disease – in which fatty deposits block the coronary arteries that supply the heart – continue to emerge.

In the 1970s, NHLBI sponsored a clinical study of coronary artery bypass surgery. This surgical procedure routes blood around blocked coronary arteries via healthy vessels grafted from other parts of the body. Angioplasty, the use of a balloon-tipped catheter (or tube) to dilate clogged arteries, was developed by an NHLBI grantee to clear peripheral arteries without surgery. This technique has since been used in coronary arteries with ever-increasing success.

Public education programs to reduce cholesterol and fat in the diet, to control high blood pressure, and to stop smoking are being promoted by several NIH institutes. They have had a real impact on changing the American lifestyle to "heart healthy."

Patient undergoing stress test.



Life Savers.

Follow your doctor's suggested exercise program. Every day. Rain or shine.

Use a salt substitute like lemons or herbs. When you cook. And at every meal.

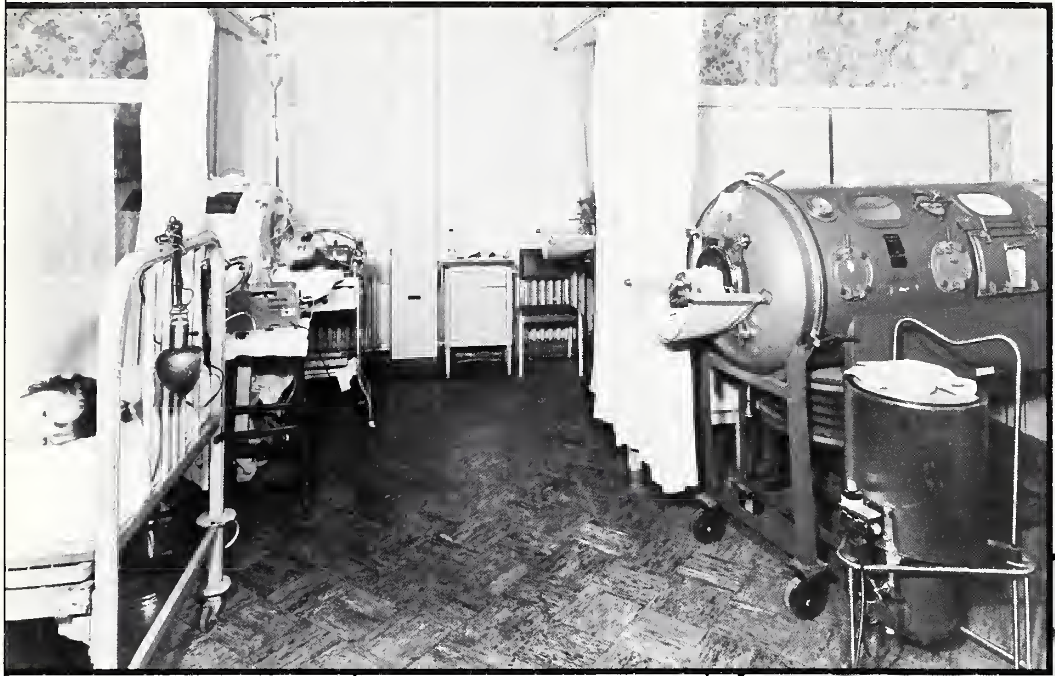
Control your weight. If the pounds creep up, so will your blood pressure.

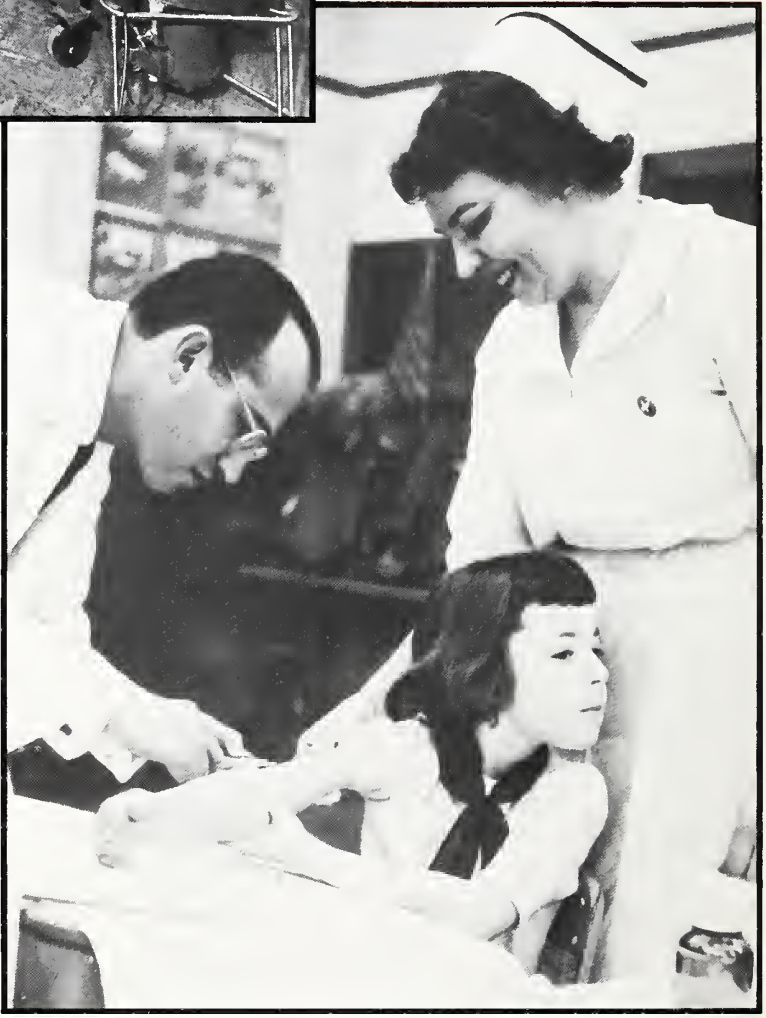
Take your high blood pressure pills. Used as directed, every day, they're just what the doctor ordered.

High Blood Pressure. Treat it for life.

U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung, and Blood Institute, National High Blood Pressure Education Program

Polio patients in "iron lungs."





MEDICAL TRIUMPHS OF THIS CENTURY

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Diseases of the Past

In 1887 pneumonia, tuberculosis, diphtheria, cholera, and a host of other infectious diseases were often fatal. Because of improvements in public health measures, vaccine development, and the discovery of wonder drugs like penicillin in the 1940s, these diseases are no longer dreaded killers. Polio and hepatitis are more recent examples of progress against once dreaded diseases.

Polio

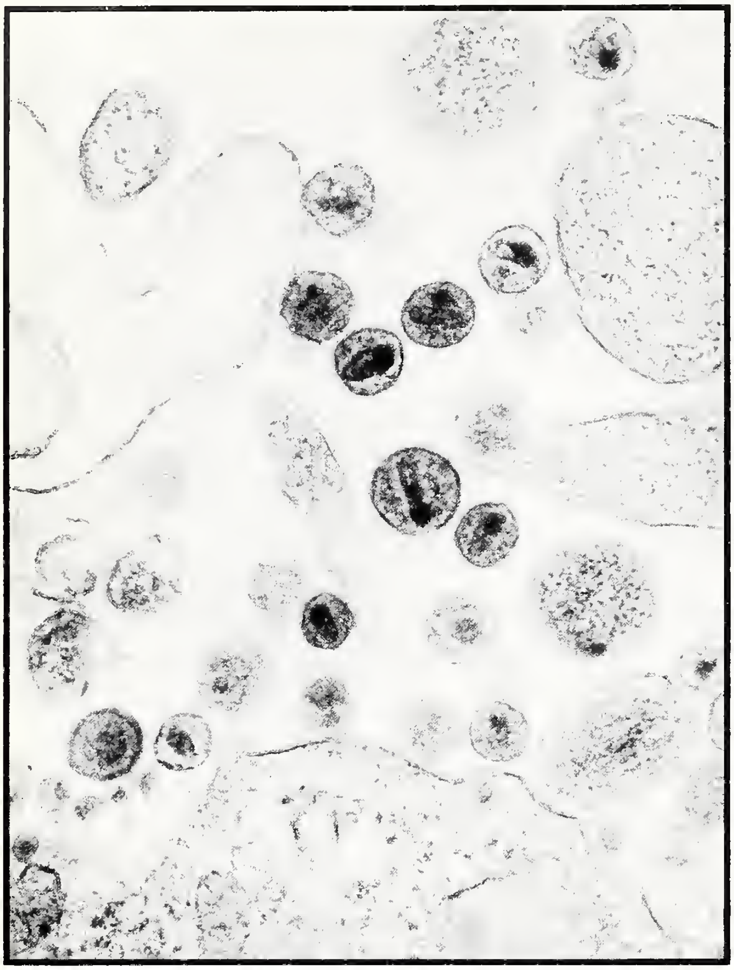
Many can remember when polio was still rampant. In 1952 there were nearly 60,000 cases of polio in the United States. Over a third of those cases, mostly children, were left paralyzed by the disease. Dr. Jonas Salk, using the findings of an NIH-supported team of Harvard researchers who successfully cultured the polio virus, developed an inactivated virus vaccine. In 1954, 400,000 children were innoculated with the Salk vaccine.

Dr. Albert Sabin produced a live, oral polio vaccine that was tested in 1957. The vaccines of Drs. Salk and Sabin had given the world protection against a terrible killer and crippler.

Hepatitis

Americans can also remember a time when a blood transfusion meant the risk of contracting hepatitis B. In 1964 Dr. Baruch Blumberg, an NIH Nobelist, discovered the Australia antigen, a blood marker for the presence of the hepatitis B virus. This led to the development of a test to screen donated blood for hepatitis B, greatly reducing the risk of transfusion. Research supported by the NIH's National Institute of Allergy and Infectious Diseases (NIAID) was also instrumental in the development of a safe, effective vaccine for hepatitis B to protect hospital workers and other at-risk groups.

NIH scientists were the first to prove that non-A, non-B hepatitis is a distinct disease and also the first to provide direct evidence that a virus or viruses are involved in the transmission of non-A, non-B hepatitis. NIH research on hepatitis has continued in a quest for better screening methods and improved treatment for those who are infected.



Electron microscope photograph of human helper lymphocytes infected by and producing the AIDS virus, magnified 135,000 times.

TOMORROW:

■

Defeating AIDS

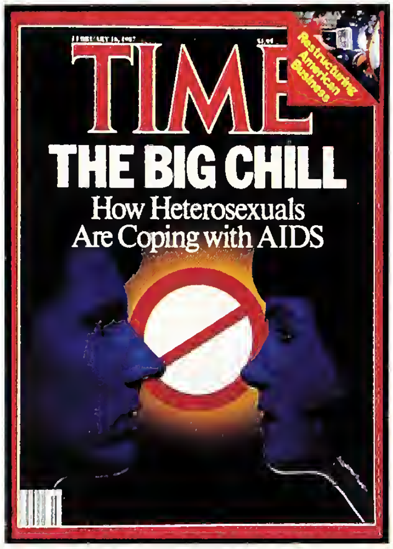
AIDS, Acquired Immunodeficiency Syndrome, is a terrible disease that renders the body defenseless against a whole host of infectious organisms. AIDS is also, unfortunately, a very good answer to the question "Why do we need biomedical research?"

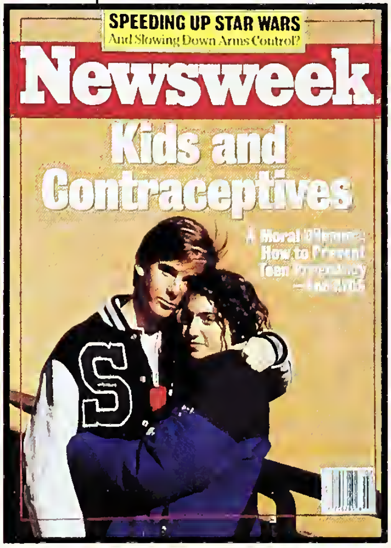
AIDS was first described as a disease by NIH grantee scientists at UCLA in 1981. Less than three years after that clinical description, Dr. Luc Montagnier at the Pasteur Institute and Dr. Robert Gallo at NIH's National Cancer Institute had each isolated the retrovirus that causes AIDS. Dr. Gallo had also discovered how to grow the AIDS virus in large quantities for research purposes.

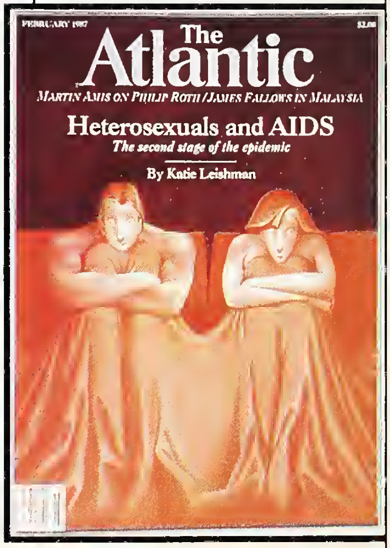
Other research advances have followed: antibody tests for blood screening; improved understanding of AIDS transmission and prevention; deciphering the genetic code of the virus; and delineating AIDS effect on the immune system.

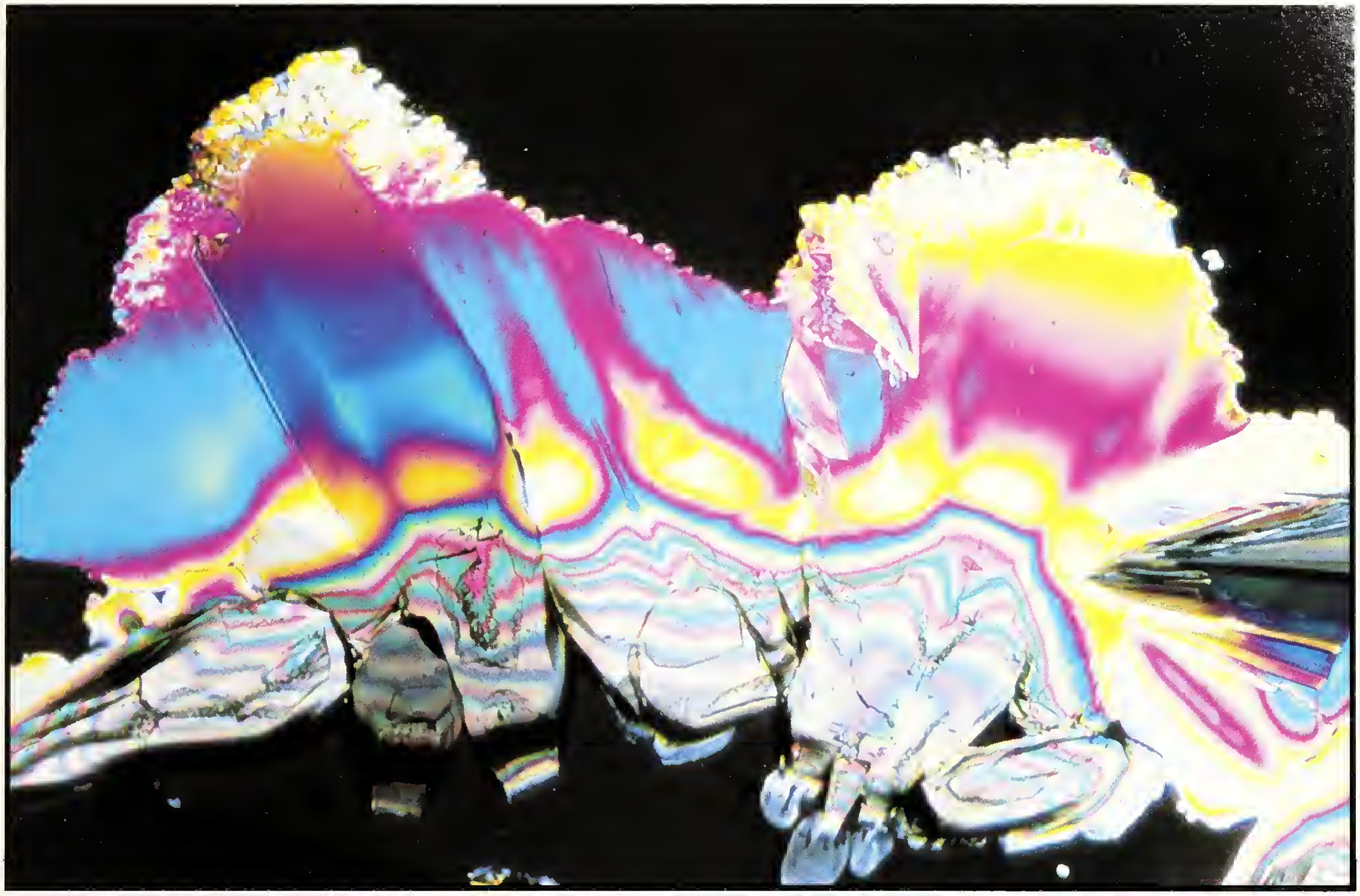
This amazingly rapid progress was possible because of an enormous investment in decades of painstaking research on immunoregulation, basic virology, opportunistic pathogens, retroviruses, and DNA recombination.

NIH is supporting basic and clinical research to defeat AIDS. Vaccines, drugs for the treatment of AIDS, an understanding of the virus at the molecular level, all avenues are being investigated as this disease continues to take a dreadful toll worldwide. The search goes on at NIH laboratories and at NIH grantee institutions across the country. It is hoped that AIDS will soon be listed among the conquered diseases.


TIME
Restructuring American Business
THE BIG CHILL
How Heterosexuals Are Coping with AIDS


SPEEDING UP STAR WARS
And Slowing Down Arms Control?
Newsweek
Kids and Contraceptives
A Moral Dilemma: How to Prevent Teen Pregnancy —and AIDS


FEBRUARY 1987
The Atlantic
MARTIN AMIS ON PHILIP ROTH / JAMES FALLOWS IN MALAYSIA
Heterosexuals and AIDS
The second stage of the epidemic
By Katie Leishman



Crystal of AZT, a drug used in the treatment of AIDS.

EXTRAMURAL RESEARCH PROGRAMS

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A Geographic Distribution of NIH Research Support

NIH conducts research on the Bethesda campus and supports research throughout the United States. Through a competitive grant system, NIH identifies and supports the quest for biomedical knowledge. The objective is excellent research and better health for all.

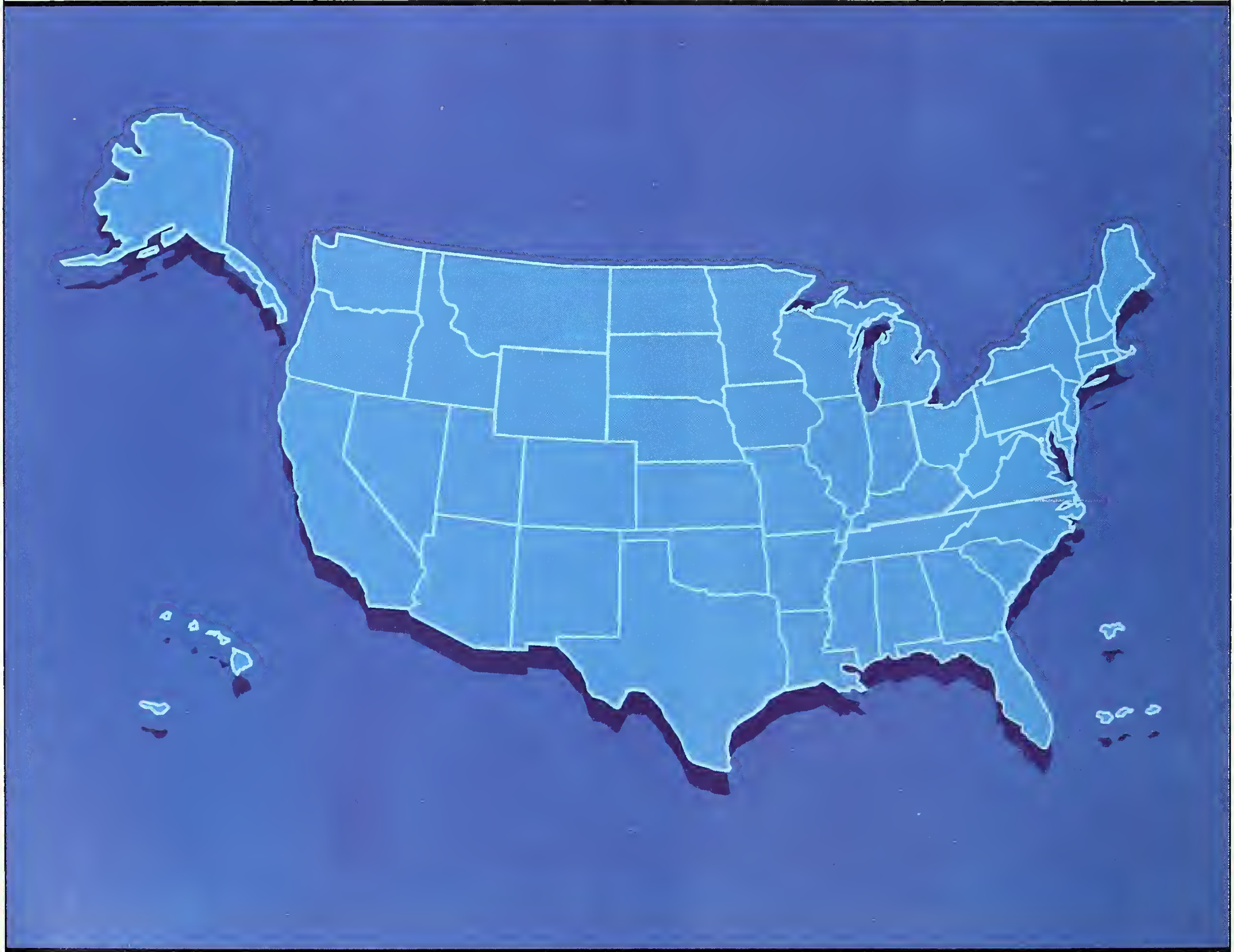
The majority of NIH funds are awarded as research grants for individual scientists.

The average investigator-initiated grant in 1985 was over $150,000. Investigator-initiated grants are awarded competitively.

The dollar amount for grantee institutions and states shown below are the cumulative total of grants, contracts, and other forms of research support.

Total grants and contracts awarded in 1986: $4,400,434,000.

NIH intramural research and direct operations in 1986: $870,370,000.



NIH Support for Health Research — 1986

Allocated by Department of Health and Human Services

Alabama	$ 64,213,000
Alaska	$ 130,000
Arizona	$ 30,313,000
Arkansas	$ 3,583,000
California	$649,508,000
Colorado	$ 59,370,000
Connecticut	$121,763,000
Delaware	$ 2,027,000
District of Columbia	$ 45,561,000
Florida	$ 60,236,000
Georgia	$ 51,855,000
Guam	$ 10,000
Hawaii	$ 9,627,000
Idaho	$ 860,000
Illinois	$152,870,000
Indiana	$ 42,551,000
Iowa	$ 43,560,000
Kansas	$ 15,673,000
Kentucky	$ 14,547,000
Louisiana	$ 31,586,000
Maine	$ 9,495,000
Maryland	$275,696,000
Massachusetts	$473,137,000
Michigan	$105,071,000
Minnesota	$106,055,000
Mississippi	$ 8,156,000
Missouri	$ 99,417,000
Montana	$ 1,908,000
Nebraska	$ 10,086,000
Nevada	$ 2,318,000
New Hampshire	$ 16,219,000
New Jersey	$ 43,453,000
New Mexico	$ 15,851,000
New York	$562,625,000
North Carolina	$152,825,000
North Dakota	$ 510,000
Ohio	$121,097,000
Oklahoma	$ 12,622,000
Oregon	$ 39,137,000
Pennsylvania	$249,892,000
Puerto Rico	$ 8,594,000
Rhode Island	$ 21,352,000
South Carolina	$ 16,813,000
South Dakota	$ 610,000
Tennessee	$ 74,853,000
Texas	$214,556,000
Utah	$ 39,565,000
Vermont	$ 18,935,000
Virgin Islands	$ 181,000
Virginia	$ 74,053,000
Washington	$133,089,000
West Virginia	$ 3,907,000
Wisconsin	$ 87,737,000
Wyoming	$ 776,000

Top 20 NIH Grantee Institutions — 1986

Johns Hopkins University, Baltimore, MD	$116,350,466
University of California, San Francisco, CA	$99,246,561
Yale University, New Haven, CT	$90,996,177
University of Washington, Seattle, WA	$90,737,302
Harvard University, Cambridge, MA	$84,309,663
Stanford University, Stanford, CA	$82,546,957
University of Pennsylvania, Philadelphia, PA	$81,436,788
Columbia University, New York, NY	$79,574,090
University of California, Los Angeles, CA	$78,035,294
University of Minnesota, Minneapolis, MN	$67,247,250
Washington University, St. Louis, MO	$66,520,348
University of Wisconsin, Madison, WI	$66,465,475
University of California, San Diego, CA	$63,204,329
University of Michigan, Ann Arbor, MI	$61,209,774
Yeshiva University, New York, NY	$57,624,336
University of North Carolina, Chapel Hill, NC	$57,441,789
Duke University, Durham, NC	$57,414,091
Cornell University, Ithaca, NY	$51,926,970
University of Southern California, Los Angeles, CA	$51,087,397
University of Chicago, Chicago, IL	$49,644,585

NIH: How It Works

NIH conducts and supports research on every aspect of human biology from the effects of the environment on health to rare genetic diseases. Cancer, heart disease, infectious diseases, Alzheimer's disease, even tooth decay are part of NIH's research portfolio.

The Institutes conduct and support research projects on almost every disease and disability.

National Cancer Institute

National Heart, Lung, and Blood Institute

National Institute of General Medical Sciences

National Institute of Diabetes and Digestive and Kidney Diseases

National Institute of Arthritis and Musculoskeletal and Skin Diseases

National Institute of Allergy and Infectious Diseases

National Institute of Child Health and Human Development

National Institute on Aging

National Institute of Dental Research

National Institute of Environmental Health Sciences

National Eye Institute

National Institute of Neurological and Communicative Disorders and Stroke

National Library of Medicine

Warren Grant Magnuson Clinical Center

Division of Computer Research and Technology

Fogarty International Center

Division of Research Resources

Division of Research Grants

Division of Research Services

National Center for Nursing Research

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